

1. Ionic compounds.

Examples:  $MgCl_2$ ,  $NaNO_3$ ,  $Ag_2S$ ,  $Fe(NO_3)_3$ ,  $Fe_2O_3$ ,  $K_2SO_4$ ,  $Li_2CO_3$ ,  $AlPO_4$ ,  $Cu_2SO_4$ ,  $NH_4Cl$

a. Ionic compounds typically contain \_\_\_\_\_.

both metals and nonmetals

only metals

only nonmetals

b. Explain how ionic compounds form from elements. What is happening with the electrons?

electrons transfer from metal to nonmetal to form (+) and (-) ions which then attract each other

2. Covalent compounds (aka "molecular compounds").

Examples:  $CO_2$ ,  $CO$ ,  $H_2O$ ,  $CCl_4$ ,  $C_8H_{18}$ ,  $SO_3$ ,  $SO_2$ ,  $OF_2$ ,  $PCl_5$ ,  $NI_3$ ,  $C_6H_{12}O_6$ ,  $NO$ ,  $NO_2$ ,  $N_2O$ ,  $N_2O_3$ ,  $N_2O_4$ ,  $N_2O_5$

a. Covalent compounds typically contain \_\_\_\_\_.

both metals and nonmetals

only metals

only nonmetals

b. Explain how covalent compounds form from elements. What is happening with the electrons?

- electrons are shared between atoms

**Prefixes!**

- |           |           |
|-----------|-----------|
| 1 = mono  | 6 = hexa  |
| 2 = di    | 7 = hepta |
| 3 = tri   | 8 = octa  |
| 4 = tetra | 9 = nona  |
| 5 = penta | 10 = deca |

3. Fill in the missing name or formula for these covalent compounds:

$NO_2$  nitrogen dioxide

carbon tetraiodide  $CI_4$

$NO$  nitrogen monoxide

$CBr_2I_2$  carbon dibromide diiodide

$P_2O_5$  diphosphorus pentoxide

4. Fill in the missing name or formula for these ionic compounds:

$BaCl_2$  barium chloride

$Al_2S_3$  Aluminum Sulfide

$PbO$  Lead (II) oxide

$Fe_2S_3$  Iron (III) Sulfide

ammonium sulfate  $(NH_4)_2SO_4$

Tin (IV) carbonate  $Sn(CO_3)_2$

5. For each compound below, classify it as ionic or covalent, and then fill in the missing name or formula.

$\text{NCl}_3$  C nitrogen trichloride

$\text{AlCl}_3$  I aluminum chloride

$\text{CO}$  C carbon monoxide

$\text{CO}_2$  C carbon dioxide

$\text{NiBr}_2$  I nickel bromide

$\text{SO}_2$  C sulfur dioxide

$\text{NI}_3$  C nitrogen triiodide

$\text{B}_2\text{O}_3$  C diboron trioxide

potassium peroxide I  $\text{K}_2\text{O}_2$

$\text{PCl}_5$  C phosphorus pentachloride

Calcium hydride I  $\text{CaH}_2$

disilicon hexahydride C  $\text{Si}_2\text{H}_6$

$\text{SF}_6$  C sulfur hexafluoride

gold (III) sulfide I  $\text{Au}_2\text{S}_3$   $\text{Au}^{+3}\text{S}^{-2}$

$\text{XeF}_4$  C xenon tetrafluoride

$\text{Li}_2\text{O}$  I Lithium oxide

$\text{N}_2\text{O}_4$  C dinitrogen tetroxide

sulfur trioxide C  $\text{SO}_3$

Iron (III) phosphide I  $\text{FeP}$

Calcium phosphate I  $\text{Ca}_3(\text{PO}_4)_2$

$\text{Si}_3\text{N}_4$  C trisilicon tetranitride

$\text{Pb}_3\text{N}_4$  I lead (IV) nitride

disulfur decafluoride C  $\text{S}_2\text{F}_{10}$

silver sulfate I  $\text{Ag}_2\text{SO}_4$

or "plumbic nitride"  
 $\text{Pb}^{+4} / \text{N}^{-3}$